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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/579,239

05/12/2006

Koichiro Tanaka

0756-7682

1310

31780

7590

04/13/2009

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EXAMINER

SMITH, BRADLEY

ART UNIT

PAPER NUMBER

2894

MAIL DATE

DELIVERY MODE

04/13/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/579,239	Applicant(s) TANAKA ET AL.	
	Examiner Bradley K. Smith	Art Unit 2894	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 December 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4,6 and 11-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4,6 and 11-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 13 and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The examiner is not sure what the term “near infra-red encompasses”. (The examiner will consider near-infrared as infrared.)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Semiconductor Energy Lab (JP 2001-308344) in view of Yamazaki (US 20030085720) and Sugioka et al. (WO 03/099508 published 4/12/03 (parent of US 2006/0091122 which is used as an English translation)). Semiconductor Energy Lab disclose forming a gate insulating film over a semiconductor layer of a SOI substrate; forming a gate electrode over the gate insulating film; selectively injecting impurities into the semiconductor layer of the SOI substrate to form an impurity region; processing a laser beam having a fundamental wave into a long beam

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on a surface of the impurity region. Regarding claim 3, Semiconductor Energy Lab disclose the impurity region is a source drain region [0108]. Regarding claim 4, Semiconductor Energy Lab disclose the impurity region is an extension of the transistor [0108]. Regarding claim 6, Semiconductor Energy Lab disclose an Nd YLF laser.

Semiconductor Energy Lab fails to disclose the moving the surface of the impurity region relative to long beam to scan the laser beam to activate the impurity region and the laser beam having a pulse width of 1 femtosecond to 10 picoseconds.

However Yamazaki disclose the moving the surface of the impurity region relative to long beam to scan the laser beam for annealing a semiconductor substrate[0065] (see figure 1, 7A, 11A-12C). Sugoika et al disclose using a femtosecond laser (abstract)

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Semiconductor Energy Lab, Yamazaki, and Sugoika because moving the surface of the impurity region would be well within the skill in the art and would have yielded predictable results such as being able to move the substrate underneath the laser. Furthermore the femtosecond laser can generate multiphoton absorption [0094- from the child application].

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Semiconductor Energy Lab (JP 2001-308344) in view of Yamazaki (US 20030085720) and Sugioka et al. (US 2006/0091122) as applied to claims 1 and 2 above. Semiconductor Energy Lab and Yamazaki disclose the claimed invention except for the laser beam is a pulsed laser light with a repetition rate of 10MHz or more. It would have been obvious to one of ordinary skill in the art at the time the invention was made to pulse the laser light with a repetition rate of 10MHz or more, since in

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has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In *Re Aller*, 105 USPQ 233. Furthermore, the higher repetition rate could enable one to process wafers faster.

Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Semiconductor Energy Lab (JP 2001-308344) in view of Yamazaki (US 20030085720) and Sugioka et al. (US 2006/0091122) as applied to claims 1 and 2 above. Semiconductor Energy Lab and Yamazaki disclose the claimed invention except for peak output power of the laser beam is $1\text{GW}/\text{cm}^2$ to $1\text{TW}/\text{cm}^2$. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a peak output power of the laser beam at $1\text{GW}/\text{cm}^2$ to $1\text{TW}/\text{cm}^2$, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In *Re Aller*, 105 USPQ 233. Furthermore, the higher peak power could enable one to process wafers faster (by doing more work per unit time).

Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Semiconductor Energy Lab (JP 2001-308344) in view of Yamazaki (US 20030085720) and Sugioka et al. (US 2006/0091122) as applied to claims 1 and 2 above. Semiconductor Energy Lab and Yamazaki disclose the claimed invention except for wavelength band of the fundamental wave is from red ray to infrared ray. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have wavelength band of the fundamental wave from red ray to infrared ray., since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only

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routine skill in the art. In *Re Aller*, 105 USPQ 233. Furthermore, the choosing the wavelength of the laser will allow one to tailor the anneal.

Response to Arguments

Applicant's arguments with respect to claims 1-4, 6, 7, 11-14 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bradley K. Smith whose telephone number is 571-272-1884. The examiner can normally be reached on 10-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kim Nguyen can be reached on 571-272-2402. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Bradley K Smith/
Primary Examiner, Art Unit 2894